WE CLAIM:

1. A group of isolated homologous cellular growth stimulating proteins designated gastrokines, said proteins produced by gastric epithelial cells and comprising the amino acid sequence VKEK/QKKXXGKGPGGXPPK.

2. An isolated protein from the group of claim 1, said protein further characterized as comprising an amino acid sequence as in FIG. 7, present in pig gastric epithelia in a processed form lacking the 20 amino acids which constitute a signal peptide sequence, having 165 amino acids and an estimated molecular weight of approximately 18kD as measured by polyacrylamide gel electophoresis, said protein capable of being secreted.

3. A protein from the group of claim 1, further characterized as comprising an amino acid sequence as in FIG. 3, said sequence deduced from a human cDNA.

4. A protein from the group of claim 1, further characterized as comprising an amino acid sequence as in FIG. 6, said sequence predicted from mouse RNA and DNA.

5. A growth stimulating peptide derived from a protein of claim 1.

6. A modified peptide produced by the method comprising the following steps:

(a) eliminating major protease sites in an unmodified peptide amino acid sequence by amino acid substitution or deletion in the unmodified peptide derived from a protein of claim 1; and

(b) optionally introducing amino acid analogs of amino acids in the unmodified peptide.

7. A synthetic growth stimulating peptide, having a sequence of amino acids from positions 78 to 119 as shown in FIG. 3.

8. The synthetic growth stimulating peptide of claim 7, said peptide having a sequence of amino acids from position 97 to position 117 as shown in FIG. 3.

9. The synthetic growth stimulating peptide of claim 7, said peptide having a sequence of amino acids from position 97 to position 121 as shown in FIG. 3.

10. The synthetic growth stimulating peptide of claim 7, said peptide having a sequence of amino acids from position 104 to position 117 as shown in FIG. 3.

11. An isolated bioactive peptide comprising a sequence selected from the group consisting of LDTMVKEQK..GKGPGGAPPKDLMY and KKLQGKGPGGPPPK.

12. An inhibitor of a protein of claim 1, said inhibitor selected from the group of peptides having an amino acid sequence consisting of KKTCIVHKMKK, and KKEVMPSIQSLDALVKEKK.

13. A composition used for the treatment of ulcers, said composition including at least a growth stimulating peptide of claim 5.

14. A pharmaceutical composition for the treatment of diseases associated with overgrowth of gastric epithelia, said compositions comprising an inhibitor of a protein of the group of claim 1 or of a growth stimulating peptide of claim 5.

15. A pharmaceutical composition for the treatment of diseases of the colon and small intestine, said diseases selected from the group consisting of ulcerative colitis and Crohn's Disease, said composition comprising at least a growth stimulating peptide of claim 5.

16. An antibody to a protein of the group of claim 1, said antibody recognizing an epitope within a peptide of the protein that has an amino acid sequence from position 78 to position 119 as in FIG. 3.

17. An isolated genomic DNA molecule with the nucleotide sequence of a human as shown in FIG. 1.

18. An isolated cDNA molecule encoding a human protein, said protein having the amino acid sequence as shown in FIG 2.

19. An isolated DNA molecule comprising the genomic sequence found in DNA derived from a mouse, said nucleotide sequence shown in FIG. 4.

20. A mouse with a targeted deletion in a nucleotide sequence in the mouse genome that when expressed without the deletion encodes a protein of the group of claim 1.

21. A method of making a protein from the group of claim 1 or a peptide derived from a protein of claim 1, said method comprising:

(a) obtaining an isolated cDNA molecule comprising a sequence encoding the protein or peptide;

(b) placing the molecule in a recombinant DNA expression vector;

(c) transecting a host cell with the recombinant DNA expression vector

(d) providing environmental conditions allowing the transfected host cell to produce a protein encoded by the cDNA molecule; and

(e) purifying the protein from the host cell.

22. A method to stimulate growth of epithelial cells in the gastrointestinal tract of mammals, said method comprising :

(a) contacting the epithelial cells with a composition comprising a protein from the group of claim 1 or a peptide derived from a protein of claim 1, and

(b) providing environmental conditions for stimulating growth of the epithelial cells.

23. A method to inhibit cellular growth stimulating activity of a protein of the group of claim 1, said method comprising:

(a) contacting the protein with an inhibitor; and

(b) providing environmental conditions suitable for cellular growth stimulating activity of the protein.

24. The method of claim 23, wherein the inhibitor is an antibody directed toward at least one epitope of the protein, said epitope comprising an amino acid sequence from position 78 to position 119 of the deduced amino acid sequence in FIG. 3.

25. The method of claim 23, wherein the inhibitor is selected from the group of inhibitor peptides consisting of KKTCIVHKMKK and KKEVMPSIQSLDALVKEKK.

26. A method of testing the effects of different levels of expression of a protein of claim 1, on mammalian gastrointestinal tract epithelia, said method comprising:

(a) obtaining a mouse in accord with claim 20;

(b) determining the effects of a lack of the protein in the mouse;

(c) administering increasing levels of the protein to the mouse; and

(d) correlating changes in the gastrointestinal tract epithelia with the levels of the protein in the epithelia.

27. A method to stimulate migration of epithelial cells after injury to the gastrointestinal tract of mammals, said method comprising:

(a) contacting the epithelial cells with a composition comprising a protein from the group of claim 1 or a peptide derived from a problem of claim 1; and

(b) providing environmental conditions allowing migration of the epithelial cells.

28. A method for cytoprotection of damaged epithelial cells in the gastrointestinal tract of mammals, said method comprising:

(a) contacting the damaged epithelial cells with a composition comprising a protein of the group of claim 1 or a peptide derived from a protein of claim 1; and

(b) providing environmental conditions allowing repair of the epithelial cells.

(b) providing environmental conditions allowing repair of the epithelial cells.

29. The method of claim 28, wherein the damaged cells are an ulcer.